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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/842,587	04/26/2001	Aly A. Farag	1160.012US1	7712
21186	7590	03/11/2004	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.			VO, CLIFF N	
P.O. BOX 2938			ART UNIT	
MINNEAPOLIS, MN 55402			PAPER NUMBER	

2671

DATE MAILED: 03/11/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/842,587

Applicant(s)

FARAG ET AL.

Examiner

CLIFF N VO

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14,15 and 21-33 is/are allowed.
- 6) ☒ Claim(s) 1-4,8-10 and 16-19 is/are rejected.
- 7) ☒ Claim(s) 5-7, 11-13 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to the Amendment filed 2/9/2004 which has been entered into the record of file.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 16 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yamana et al, "A System for Human Jaw Modeling Using Intra-Oral Images".

As per claim 16, Yamana et al clearly anticipated the claimed features at page 1, col.2, lines 17-26; page 2, lines 2-13; col.1, lines 22-24, equation 3, i.e., p & q.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4, 8, 10 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Yamany et al, "3D Reconstruction of the Human Jaw From A Sequence of Images"(herein referred as Yamana A) in view of Yamany et al, "A System for Human Jaw Modeling Using Intra-Oral Images" (herein referred as Yamana B).

As per claims 1 and 17, Yamana A teaches all the features as now claimed except generating range data using a digitizing arm. However, Yamana B teaches another system for generating 3D images including mounting the camera on a 3D digitizer arm for generating range data as now claimed (page 3, col.1, lines 29-45). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implementing a step of placing a camera on the arm of the digitizer as taught by Yamana B into Yamana A system in order to make it more efficient since it would have enhanced the time to register the image data as suggested by Yamana B at page 3, col.1, lines 29-32.

As per claim 2, Yamana A further teaches wherein the plurality of two dimensional images comprising a plurality of two optical images (page 1, col.2, lines 24-31).

As per claim 8, Yamana A further inherently teaches a computer readable medium having computer executable instructions in order to cause the computer system to perform the steps as set forth in claim 1.

As per claim 19, Yamana A further teaches the claimed features at Fig.2, page 1, col.2, lines 1-20.

As per claims 4 and 10, Yamana A fails to teach a step of generating a plurality of 2D images of the oral cavity from a common reference point in three dimensional space. However, Yamana B teaches that step at page 3, lines 33-40. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure Yamana A system by including the step of generating 2D images from a

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common reference point in 3D space because it would have greatly enhanced the time required for registration as suggested by Yamana B at page 3, lines 47-48.

3. Claims 3, 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamana A in view of Yamana B as applied to claims 1, 8 and 17 above, and further in view of Rider et al (U.S. Patent No. 6,192,329).

As per claims 3, 9 and 18, the system of Yamana A in view of Yamana B fails to implicitly teach a step of constructing a physical cast of the oral cavity from the 3D image. However, Rider et al teach another computer system including a step of forming a physical model of the oral cavity from the 3D image (col.1, line 63 through col.2, line 9). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the step of forming physical cast of the oral cavity as described in Rider et al into the system of Yamana A in view of Yamana B in order to make it more efficient because it would have allowed the user to demonstrate the model more clearly which is difficult to communicate with the virtual 3D computer representation as suggested by Rider et al at col.8, lines 37-40.

***Allowable Subject Matter***

4. Claims 14-15 and 21-33 are allowed.

5. Claims 5-7, 11-13 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

6. Applicant's arguments filed 2/9/2004 have been fully considered but they are not persuasive.

Applicant's argument regarding claims 1, 2, 4, 8, 10 17 and 17 are moot in view of the new ground rejection.

Regarding to claim 16, Applicant is respectfully requested to refer to equation 3, i.e., light sources p and q, of Yamana B reference.

Regarding to claims 3, 9 and 18, it is noticed that the examiner using the teachings of forming the physical cast of the model from 3D image wherein the motivation is fully supported by Rider et al at col.8, lines 37-40.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLIFF N VO whose telephone number is 703-305-9594. The examiner can normally be reached on 2nd Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MARK K ZIMMERMAN can be reached on 703-305-9798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



CLIFF N VO  
Primary Examiner  
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